

WHAT IS CLAIMED IS:

Claim 1. A process for producing electrical energy from thermal energy comprising the steps of:

- 5            supplying thermal energy to a heat pipe containing a working fluid and a capillary insert to evaporate the working fluid in a vaporizer section of the heat pipe;  
             directing the resulting vapor flow through the heat pipe to a condenser section of the heat pipe where the vapor is condensed and the resulting condensate returned to the vaporizer section via the capillary insert;
- 10           entraining liquid droplets of an electrostatic generator by means of the vapor flow from the vaporizer section of the heat pipe, the electrostatic generator having a liquid working medium to supply the liquid droplets, a solid working medium for charge separation, and a pick-up electrode within the condenser section of the heat pipe;  
             passing the vapor entrained with the liquid droplets by the solid working medium
- 15           to cause separation of the electrostatic charges between the solid and liquid working media;  
             displacing of the resulting charged liquid droplets-working medium under the action of forces caused by the kinetic energy of the molecules in the vapor flow, wherein these vapor flow forces perform work against the Coulomb forces; and
- 20           passing the liquid droplets-working medium past the pick-up electrode to pick up electric charges that are mechanically displaced by the these vapor flow forces against the Coulomb forces to generate electrical energy from the thermal energy.

- 25           Claim 2. The process of claim 1, wherein said electrostatic generator also has a first external electrode connected to said solid working medium and a second external electrode connected to said pick-up electrode.

Claim 3. The process of claim 2, wherein the pick-up electrode is a grid.

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Claim 4. The process of claim 3, wherein the solid working medium comprises a second grid

through which the vapor entrained with liquid droplets passes.

Claim 5. The process of claim 1, wherein a diaphragm of separates the vaporizer section from the condenser section to create an area of maximum flow velocity.

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Claim 6. The process of claim 5, wherein the solid working medium is located within the heat pipe substantially at the position of the maximum flow velocity.

10 Claim 7. The process of claim 1, wherein the liquid droplets are recovered and fall by gravity into a loop return and are returned to be entrained by means of the vapor.

Claim 8. The process of claim 1, wherein the liquid droplets are recovered through a loop return containing a capillary insert and are returned to be retained by means of the vapor.

15 Claim 9. The process of claim 1, wherein the same liquid is used as the fluid in the heat pipe and as the working liquid medium of the generator.

Claim 10. The process of claim 1, wherein the thermal energy is solar energy.